

Supplemental Preliminary Amendment

Applicant: Stefan Jung et al.

Serial No.: 10/538,594

(Priority Application No. DE 102 57 672.6)

(Priority Application No. DE 103 37 940.1)

(International Application No. PCT/DE03/004060)

Filed: June 9, 2005

(Priority Date: 10 December 2002)

(Priority Date: 18 August 2003)

(International Filing Date: 10 December 2003)

Docket No.: I432.119.101/P30277

Title: SURFACE PANELING MODULE ARRANGEMENT AND METHOD (As Amended)

IN THE CLAIMS

Please cancel claim 1.

Please add new claims 24-46 as follows:

Patent ClaimsWHAT IS CLAIMED IS:

1. (Cancelled)

2-23. (Cancelled)

24. (New) A method for determining a distance from surface paneling modules of a surface paneling module arrangement to at least one reference position, with electronic messages being interchanged between processor units of mutually adjacent surface paneling modules, wherein the surface paneling module arrangement has two or more surface paneling modules, and each surface paneling module comprises:

at least one electrical power supply connection;

at least one data transmission interface;

at least one processor unit which is coupled to the electrical power supply connection and to the data transmission interface;

wherein the processor unit is designed such that electronic messages are interchanged between the processor unit and a processor unit for an adjacent surface paneling module, which is coupled to the surface paneling module, in order to determine the respective distance of a processor unit from a reference position;

wherein each message contains distance information which indicates the distance of the surface paneling module of a processor unit which is sending the message or the distance

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of the surface paneling module of a processor unit which is receiving the message from the reference position;

wherein the processor unit is designed such that the actual distance to the reference position can be determined or can be stored from the distance information in a received message;

wherein the method, which is carried out for all the surface paneling modules in the surface paneling module arrangement, comprising:

producing a first message with a processor unit of a first surface paneling module, with the first message containing first distance information which contains the distance of the first surface paneling module or the distance of a second surface paneling module which receives the first message from the reference position;

sending the first message from the processor unit of the first surface paneling module to the processor unit of the second surface paneling module;

determining the distance of the processor unit of the second surface paneling module from the reference position as a function of the distance information;

wherein the processor unit of the second surface paneling module produces a second message which contains second distance information which contains the distance of the second surface paneling module or the distance of a third surface paneling module which receives the second message, from the reference position;

sending the second message from the processor unit of the second surface paneling module to the processor unit of the third surface paneling module;

determining the distance of the third surface paneling module from the reference position as a function of the second distance information;

wherein before the determination of the distance of the surface paneling modules from the reference position, the physical positions of the surface paneling modules within the surface paneling module arrangement are determined in that, on the basis of a surface paneling module at an introduction point of the surface paneling module arrangement,

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position determination messages which have at least one row parameter z and one column parameter s (which contains the row number or column number, respectively, of the processor unit sending the message or the row number or the column number, respectively, of the processor unit receiving the message within the surface paneling module arrangement) are in each case transmitted to processor units of adjacent surface paneling modules, and the respective processor unit carries out the following steps:

if the row parameter in the received message is greater than the previously stored row number of the processor unit, then the processor unit's own row number is allocated the row parameter value z of the received message;

if the column parameter in the received message is greater than the processor unit's own column number, then the stored column number is allocated the row parameter value of the received message; and

if its own row number or its own column number has been changed on the basis of the method steps described above, then new position measurement messages are produced with new row parameters and new column parameters, which each contain the row number and the column number of the processor unit sending the message or the row number and the column number of the processor unit receiving the message, and these are transmitted to a processor unit of a respective adjacent surface paneling module.

25. (New) The method of claim 24:

wherein in an iterative method, the processor unit of the surface paneling module's own distance value is changed if the previously stored distance value is greater than the received distance value (increased by a predetermined value) in the respectively received message; and

wherein in the situation where a processor unit of a surface paneling module changes its own distance value, this produces a distance measurement message and sends this to

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processor units of adjacent surface paneling modules, with the distance measurement message in each case containing its own distance as distance information or the distance value which the receiving processor unit has from the portal processor.

26. (New) The method of claim 25, wherein the distance value has a value which is greater by a predetermined value than its own distance value.

27. (New) The method of claim 24, wherein each surface paneling module has a plug connector in which the electrical power supply connection and the data transmission interface are integrated.

28. (New) The method of claim 24, wherein each surface paneling module has at least one electrical power line and at least one data line, wherein the processor unit is coupled to the electrical power supply connection by means of the electrical power line, and is coupled to the data transmission interface by means of the data line.

29. (New) The method of claim 24, wherein each surface paneling module is designed as one of the group comprising:

wall paneling module, floor paneling module, and ceiling paneling module.

30. (New) The method of claim 24, wherein each surface paneling module is designed as one of the group comprising:

a tile, a wall tile, a parquet flooring element, and a laminate element.

31. (New) The method of claim 24, wherein at least some of the surface paneling modules have at least one sensor which is coupled to the processor unit.

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32. (New) The method claim 24, wherein at least some of the surface paneling modules have at least one of the group comprising:

imaging element, sound wave production element, and vibration production element.

33. (New) A surface paneling module arrangement having two or more surface paneling modules, each surface paneling module comprising:

at least one electrical power supply connection;

at least one data transmission interface;

at least one processor unit which is coupled to the electrical power supply connection and to the data transmission interface;

the processor unit being designed such that electronic messages are interchanged between the processor unit and a processor unit for an adjacent surface paneling module, which is coupled to the surface paneling module, in order to determine the respective distance of a processor unit from a reference position;

each message containing distance information which indicates the distance of the surface paneling module of a processor unit which is sending the message or the distance of the surface paneling module of a processor unit which is receiving the message from the reference position; and

the processor unit being designed such that the actual distance to the reference position can be determined or can be stored from the distance information in a received message;

wherein the surface paneling module arrangement is designed to carry out a method for determining a distance from surface paneling modules of a surface paneling module arrangement to at least one reference position, with electronic messages being interchanged between processor units of mutually adjacent surface paneling modules, the method, which is carried out for all the surface paneling modules in the surface paneling module arrangement comprising:

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providing a first message by a processor unit of a first surface paneling module, with the first message containing first distance information which contains the distance of the first surface paneling module or the distance of a second surface paneling module which receives the first message from the reference position;

sending the first message from the processor unit of the first surface paneling module to the processor unit of the second surface paneling module;

determining the distance of the processor unit of the second surface paneling module from the reference position as a function of the distance information;

wherein the processor unit of the second surface paneling module produces a second message which contains second distance information which contains the distance of the second surface paneling module or the distance of a third surface paneling module which receives the second message, from the reference position;

sending the second message from the processor unit of the second surface paneling module to the processor unit of the third surface paneling module;

determining the distance of the third surface paneling module from the reference position as a function of the second distance information;

wherein the surface paneling module arrangement is designed such that before the determination of the distance of the surface paneling modules from the reference position, the physical positions of the surface paneling modules within the surface paneling module arrangement are determined in that, on the basis of a surface paneling module at an introduction point of the surface paneling module arrangement, position determination messages which have at least one row parameter z and one column parameter s (which contains the row number or column number, respectively, of the processor unit sending the message or the row number or the column number, respectively, of the processor unit receiving the message within the surface paneling module arrangement) are in each case transmitted to processor units of adjacent

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surface paneling modules, and the respective processor unit carries out the following steps:

if the row parameter in the received message is greater than the previously stored row number of the processor unit, then the processor unit's own row number is allocated the row parameter value z of the received message;

if the column parameter in the received message is greater than the processor unit's own column number, then the stored column number is allocated the row parameter value of the received message; and

if its own row number and/or its own column number have/has been changed on the basis of the method steps described above, then new position measurement messages are produced with new row parameters and new column parameters, which each contain the row number and the column number of the processor unit sending the message or the row number and the column number of the processor unit receiving the message, and these are transmitted to a processor unit of a respective adjacent surface paneling module.

34. (New) A textile fabric structure having a processor arrangement, the processor arrangement comprising:

at least one interface processor which provides a message interface for the processor arrangement;

a large number of processors, with, at least in some cases, only those processors which are arranged physically directly adjacent to one another being coupled to one another in order to interchange electronic messages;

with each processor of the large number of processors being allocated a sensor and/or an actuator and being coupled to the respective processor with sensor data and/or actuator data being transmitted in the electronic messages from and/or to the interface processor;

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with the processors which are arranged physically directly adjacent to one another at least in some cases being coupled to one another in accordance with a regular coupling topology whose degree is greater than unity;

wherein the processors or sensors or actuators are arranged in the textile fabric structure;

wherein electrically conductive threads couple the processors to one another;

wherein conductive data transmission threads couple the processors to one another;

and

having electrically non-conductive threads.

35. (New) The textile fabric structure of claim 34, wherein the processors which are arranged physically directly adjacent to one another are coupled to one another in accordance with a regular bus coupling topology.

36. (New) The textile fabric structure of claim 35, wherein the processors which are arranged physically directly adjacent to one another are coupled to one another in accordance with a regular ring coupling topology.

37. (New) The textile fabric structure of claim 35, wherein the regular bus coupling topology is designed in accordance with one of the group of communication interface standards comprising serial parallel interface, controller area network interface, and I²C interface.

38. (New) The textile fabric structure of claim 34, wherein the processors are arranged in rows and columns in the form of a matrix.

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39. (New) The textile fabric structure of claim 34, wherein the electrically conductive threads are designed such that they can be used to supply power to the two or more processors and/or sensors and/or actuators.

40. (New) The textile fabric structure of claim 34, wherein the conductive data transmission threads are electrically conductive.

41. (New) The textile fabric structure of claim 34, wherein the conductive data transmission threads are optically conductive.

42. (New) The textile fabric structure of claim 34, wherein the actuator is designed as at least one of the group of elements comprising imaging element, sound wave production element, and vibration production element.

43. (New) The textile fabric structure of claim 34, wherein a surface paneling structure is fixed on the textile fabric structure.

44. (New) The textile fabric structure of claim 43, wherein the surface paneling is adhesively bonded and/or laminated and/or vulcanized onto the textile fabric structure.

45. The textile fabric structure of claim 43, wherein the surface paneling structure is designed as one of the group comprising wall paneling structure, floor paneling structure, and ceiling paneling structure.

46. The textile fabric structure of claim 43, wherein a textile layer through which electrically conductive wires pass uniformly is applied at least over subareas of the textile fabric structure.